An Annotated Bibliography on Document Processing

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The scope of this bibliography, though given in the title, might be further pinned down by means of the following list of topics **not** covered:

- (digital) typography;
- electronic publishing;
- text editing;
- user interfaces;
- writing aids, such as spelling checkers;
- hyphenation;
- computer graphics;
- text retrieval;
- office automation;
- multi-media documents;
- special inputmedia, such as tablets;
- specific problems for non-latin script.

Obviously, the border lines are not sharp; papers on interactive text processing systems generally do say something about user interfaces and/or text editing, etc. Also, a few important papers, such as [Meyrowitz82] on text editing, were included. The emphasis is on papers published after 1975. But again, a few oldies, such as [Tesler73], have been retained.

Following the bibliography, a rather global cross-reference index is given. This index contains names of well-known systems such as Troff, TEX, Scribe, and some important recurring topics.

Readers are encouraged to provide us with comments and/or suggestions for additions, so that we may regularly update the bibliography.

The bibliography has been prepared with the help of Refer [Lesk79a]. The details hereof had better not be revealed. The early assistance of Ger-Jan Hofman, and many helpful comments by Heather Brown and Jacques André are gratefully acknowledged.

[Achubue81] J. O. Achubue, "On the Line Breaking Problem in Text Formatting," in: *[SIGPLAN81]*, pp. 117-122, 1981.

This paper presents and discusses solutions to the line breaking problem.

[Aderet84] A. Aderet and P. J. Hoffman, "Mnemonic Strategies in Word Processing Systems," *SIGOA*, no. 5.1-2, pp. 188-198, 1984.

The usability of character mnemonics is discussed and several issues involved in its use as effective design concept are highlighted in the context of word processing tasks.

[Allen81] T. Allen et al, "PEN: A Hierarchical Document Editor," in: *[SIGPLAN81]*, pp. 74-81, 1981.

PEN is an interactive system supporting the preparation of manuscripts containing significant mathematical notation.

[Anderson75] R. O. Anderson and R. E. Griswold, *ACOLYTE, a document formatting program,* University of Arizona, Department of Computer Science, 1975.

A nroff-like system writtem in SNOBOL4.

[André82] J. André, "Bibliographie Analytique sur les Manipulation des Textes," *Technique et Science Informatique*, no. 1.5, pp. 445-455, 1982.

Bibliography on text processing.

[Appelt85] W. Appelt, "Hohe Druckqualität mit Laserdruckern und dem Textformatierungssystem TEX," *Der GMD-Spiegel*, no. 15.1, pp. 27-31, 1985.

With TEX, the GMD offers its writers a 'comfortable' environment.

[Beach83] R. Beach and M. Stone, "Graphical style: towards High Quality Illustrations," *Computer Graphics*, no. 17.3, pp. 127-135, 1983.

Describes a prototype system that uses a set of graphical style rules to define guidelines for illustrations. These can be used to control a uniform "look" over a set of illustrations.

[Beatty79] J. C. Beatty et al, "An Interactive Documentation System," in: *Siggraph '79*, B. W. Pollack (ed.), ACM, 1979.

Possibilities include mathematics and 2D-graphics. A variety of (color) output devices, such as offset reproduction masters, color slides and viewgraphs are supported.

[Becker84] J. D. Becker, "Multilingual Word Processing," *Scientific American*, no. 251.1, pp. 82-93, July 1984.

A word-processor is described for multilingual text, which may involve

multi-directional text in many languages including Russian, Greek, Japanese, Chinese, Korean, Arabic, and Hebrew. The system is interactive and runs on a high-resolution Xerox Star workstation.

[Benoliel78] J. Benoliel and H. Manuguerra, "Mise en page et impression automatiques des textes fondees sur la reconnaissance de leur structure," PhD Thesis, Université de Nice, 1978.

describes a document preparation system which is based on recognizing the syntactic structure of a document.

[Bentley84] J. L. Bentley and B. W. Kernighan, "GRAP — A Language for Typesetting Graphs, Tutorial and user manual," Computer Science Technical Report 114, Bell Laboratories, 1984.

GRAP is a language for describing plots of data. It is a preprocessor that works with PIC and Troff.

[Berns69] G. M. Berns, "Description of FORMAT, a Text-Processing Program," *Communications of the ACM*, no. 12.3, pp. 141-146, 1969.

An early influential system for the IBM S/360. Commands are embedded within the text, and an escape character is used to switch from text to command mode.

[Biggerstaff84] T. J. Biggerstaff et al, "Table: Object Oriented Editing of Complex Structures," in: *Proceedings 7th International Conference on Software Engineering*, pp. 334-345, IEEE, 1984.

In the context of text and table objects, this research explores a Smalltalk-like, object oriented architecture for editors of such complex structures.

[Blomberg84] L. Blomberg et al, "A New Approach to Text and Image Processing," *IEEE Computer Graphics and Applications*, no. 4.7, pp. 12-22, 1984.

The user interface of a system for page make up is described. It uses a 'simulated desktop' to envision the different elements (text and graphics) that can be manipulated along the page.

[Borkin78] S. A. Borkin and J. M. Prager, "Some Issues in the design of an Editor-Formatter for Structured Documents," Technical Report, IBM Cambridge Scientific Center, 1978.

[Buchmann84] C. Buchmann and D. M. Berry, "Ditroff/Ffortid, An adaption of the Unix Ditroff for Formatting Bidirectional Text," in: *The 4th Jeruzalem Conference on Information Technology (JCIT) Proceedings*, pp. 1-6, IPA, 1984.

A collection of pre- and postprocessors to Unix Ditroff, which permits formatting text involving a mixture of languages written from left to right and from right to left.

[Burkhart80] H. Burkhart and J. Nievergelt, "Structure-oriented editors," *Berichte des Instituts fur Informatik*, no. 38, ETH Zurich, 1980.

Gives design principles for structure editors, including editors for document preparation.

[Burns76] J. C. Burns, "The evolving market for word processing and typesetting systems," in: *AFIPS 45*, pp. 617-623, 1976.

Describes industry installations and gives forecasts. Suggests an evolution which will link word-proceccing, publishing, editing and data processing.

[Canzii84] G. Canzii et al, "A scientific document delivery system," *Electronic Publishing Review*, no. 4.2, pp. 135-143, 1984.

Outlines the general architecture, and discusses technical issues of a scientific document delivery system.

[Chamberlin81] D. C. Chamberlin et al, "JANUS: An Interactive System for Document Composition," in: *[SIGPLAN81]*, pp. 82-91, 1981.

Architecture of a proposed system, intended to provide support for authors of complex documents. The system uses two displays; markup is by high level 'descriptive' tags.

[Chamberlin82] D. C. Chamberlin et al, "JANUS: an Interactive Document Formatter based on Declarative Tags," *IBM System Journal*, no. 21.3, pp. 250-271, 1982.

See [Chamberlin81].

[Coulouris76] G. F. Coulouris et al, "The design and Implementation of an Interactive Document Editor," *Software — Practice and Experience*, vol. 6, pp. 271-279, 1976.

A system designed to combine the editing and formatting power of a text editor with the simplicity and immediacy of a typewriter, meant for simple alphanumeric displays.

[Coutaz84] J. Coutaz, "The box, A layout Abstraction For User Interface Toolkits," CMU-CS-84-167, Carnegie-Mellon University, 1984.

The box can be considered as a high level input and output logical device, which automatically formats the screen-view of an object.

[Dam70] A. van Dam and D. E. Rice, "Computers and Publishing: writing, Editing and Printing," in: *Advances in Computers 10*, F. L. Alt and M. Rubinoff (ed.), pp. 145-174, Academic Press, 1970.

Concentrates on computer-assisted online writing and editing.

[Day83] R. A. Day, "Typesetting Mathematics on Multi-Acces Systems," *Software — Practice and Experience*, vol. 13, pp. 131-138, 1983.

Describes a system for typesetting mathematics on conventional multi-access systems using standard, ready-available peripherals.

[Donzeau-Gouge83] V. Donzeau-Gouge et al, "Outline of a tool for document manipulation," in: *IFIP83*, R. E. A. Manson (ed.), pp. 615-629, North-Holland, 1983.

Gives an account of MENTOR, a general system for the manipulation of formal documents of various kinds.

[Doster84] W. Doster and R. Oed, "Word Processing with On-line Script Recognition," *IEEE Micro*, no. 4.5, pp. 36-43, 1984.

Adding a graphics tablet, a stylus, and special software to a personal computer system enables its users to edit text with simple, handwritten commands.

[Feiner81] S. Feiner et al, "An Integrated system for Creating and Presenting Complex Computer-Based Documents," *ACM Computer Graphics*, no. 15.3, pp. 181-189, 1981.

Describes an experimental sytem in which pictures and text can be combined on a high resolution display.

[Furuta82] R. Furuta et al, "Document formatting Systems: Survey, Concepts, and Issues," *ACM Computing Surveys*, no. 14.3, pp. 417-472, September 1982.

This excellent paper describes and evaluates several representative and seminal systems, and discusses some issues relevant to future systems. The emphasis is on topics related to the specification of document formats.

[Furuta85] R. Furuta and P. A. Mackay, "Two TEX Implementations for the IBM PC," *Dr. Dobb's Journal*, pp. 80-91, sep 1985.

Discusses MicroTEX and PCTEX.

[Ganzinger85] H. Ganzinger and W. Willmertinger, "FOAM: A Two-Level Approach to Text Formatting on a Micro-computersystem," *Software — Practice and Experience*, vol. 15, pp. 327-341, 1985.

The system accepts descriptions of text and document classes together with formatting styles for text components. From the description, a specific instance of a formatter is generated.

[Gehringer80] E. F. Gehringer and S. R. Vegdahl, "LETTER: A system for Personalizing Processed Text," *ACM Sigsmall Newsletter*, no. 6.2, pp. 199-205, 1980.

LETTER provides a high-level language for creating multiple versions of a document.

[Gibson85] D. R. Gibson and D. A. Duce, "GKS graphics and text pro-

cessing," *Computer Graphics Forum*, no. 4, pp. 259-270, 1985.

Discussion of a Troff preprocessor which translates GKS metafiles to PIC's language.

[Goldfarb81] C. F. Goldfarb, "A Generalized Approach to Document Markup," in: *[SIGPLAN81]*, pp. 68-73, 1981.

In GML, the user marks up a document with mnemonic tags. The specific layout is determined by the formatting program. GML is a predecessor to SGML (see [ISO85a]).

[Good81a] M. Good, "An Ease of Use Evaluation of an Integrated Editor and Formatter," LCS TR-266, M.I.T., 1981.

In this report the results of a controlled experiment, in which computer-naive office workers were taught Etude's use, are presented. See also [Hammer81]. Contains an annotated bibliography on human factors.

[Good81b] M. Good, "Etude and the Folklore of User Interface Design," in: *[SIGPLAN81]*, pp. 34-43, 1981.

In this paper the principles are shown that underlie the design of the Etude text processing system.

[Gutknecht84] J. Gutknecht and W. Winiger, "Andra: The Document Preparation System of the Personal Workstation Lilith," *Software — Practice and Experience*, vol. 14, pp. 73-100, 1984.

A more-or-less WYSIWYG system, inspired by the Bravo editor.

[Gutknecht85] J. Gutknecht, "Concepts of the text editor Lara," *Communications of the ACM*, no. 28.9, pp. 942-960, 1985.

Lara is the successor of Andra [Gutknecht84]. Lara does not depend on a 'style' file, but layout attributes may be copied from one place on the display to another.

[Hammer81] M. Hammer et al, "The Implementation of Etude, An Integrated and Interactive Document Preparation System," in: *[SIGPLAN81]*, pp. 137-146, 1981.

Etude is an experimental text processing system that is being developed in order to formulate and evaluate new approaches in the design of user interfaces.

[Hansson81] H. Hansson and J. Steensgaard-Madsen, "Document Preparation Systems," *Software — Practice and Experience*, vol. 11, pp. 983-997, 1981.

Gives an introduction to programs used to prepare the layout of a text. It presents a suitable terminology for the description of documents, and describes the basic characteristics of phototypesetters.

[Hibbard84] P. Hibbard, *Mint Reference Manual,* Carnegie-Mellon University, 1984.

Mint provides for an interactive layout facility tailored to document preparation needs, which supports heterogeneous data.

[Horak83] W. Horak, "Interchanging mixed text-image documents in the office environment," *Computers & Graphics*, no. 7.1, pp. 13-29, 1983.

Discusses existing document communication services, techniques for the interchange of mixed text-image documents, and an experimental text-image workstation.

[Horak84a] W. Horak, "Concepts of the Document Interchange Protocol for the Telematic Services — CCITT Draft Recommendation S.a.," *Computer Networks*, no. 8, pp. 175-185, 1984.

An overvieuw of Draft Recommendation S.a., intended for the interchange of mixed text/image documents.

[Horak84b] W. Horak and G. Krőnert, "An Object-Oriented Office Document Architecture Model for Processing and Interchange of Documents," *SIGOA*, no. 5.1-2, pp. 152-160, 1984.

Discusses the standardization work of ECMA TC2 on ODA and ODIF.

[Horak85] W. Horak, "Office document Architecture and Office Document Interchange formats: Current status of International Standardization.," *IEEE Computer*, no. 18.10, pp. 50-60, 1985.

Discusses the architectural model, the underlying processing model, and the principles of the interchange formats of ECMA 101 and ISO drafts, known as ODA and ODIF.

[ISO85a] ISO, "Information processing — Text and office systems — Standard Generalized markup Language (SGML)," Draft international Standard ISO/DIS 8879, 1985.

Specifies a language for document representation. See also [Goldfarb81].

[ISO85b] ISO, "Text Preparation and Interchange — Text and Office Systems," DP 8613 ISO/TC97/SC18/WG3, 1985.

A proposed multi-party standard. Part 2 describes the Office Document Architecture (ODA); Part 5 the Interchange Formats (ODIF).

[Ilson80] R. Ilson, "An integrated Approach to Formatted Document Production," LCS TR-253, M.I.T., 1980.

Discusses characteristics and details of the implementation and characteristics of Etude, an interactive text processing system. See also [Hammer81].

[Irving84] R. H. Irving, "An approach to assessment of Text Handling

Systems," *SIGOA*, no. 5.1-2, pp. 181-187, 1984.

Describes an initial framework for assessing the productivity of text processing centres and discusses results from a field trial.

[Jochum81] G. Jochum and W. Willmertinger, "A tool for developing text processing sytems: Translator Writing Systems," TUM-I8103, TU Munchen, Institut fur Informatik, 1981.

With the help of TWS, editing and formatting programs can be generated in a formal and also simple manner.

[Joloboff83] V. Joloboff, "An Interactive Graphics Editor for Document Preparation," *SIGPC Notices*, no. 6.6, pp. 45-53, 1983.

This paper describes an interactive graphics editor for designing illustrations to be inserted in documents.

[Kernighan75] B. W. Kernighan and L. L. Cherry, "A System for Typesetting Mathematics," *Communications of the ACM*, no. 18.3, pp. 151-157, 1975.

EQN is a program for typesetting mathematics on UNIX. The EQN language was designed to be easy to use by people who know neither mathematics nor typesetting. EQN works as a preprocessor to Troff.

[Kernighan78] B. W. Kernighan et al, "Document Preparation," *The Bell System Technical Journal*, no. 57.6, pp. 2115-2135, 1978.

An overview of Troff and its preprocessors.

[Kernighan79a] B. W. Kernighan, "A TROFF Tutorial," in: *UNIX Programmers Manual 7th edition*, vol. 2A, pp. 237-250, Bell Laboratories, 1979.

An introduction to the most basic use of Troff. It presents just enough information to enable the user to do simple formatting tasks, and to make incremental changes to existing packages of Troff commands.

[Kernighan79b] B. W. Kernighan and L. L. Cherry, "Typesetting Mathematics — User's Guide," in: *UNIX Programmers Manual 7th edition*, vol. 2A, pp. 151-161, Bell Laboratories, 1979.

User's guide to EQN. See also [Kernighan75].

[Kernighan81] B. W. Kernighan, "A Typesetter-independent TROFF," Computer Science Technical Report 97, Bell Laboratories, 1981.

Describes the conversion of Troff to deal with a wide class of typesetters.

[Kernighan82a] B. W. Kernighan, "PIC — A language for typesetting graphics," *Software — Practice and Experience*, vol. 12, pp. 1-21, 1982.

PIC is a language for drawing simple figures on a typesetter. The basic ob-

jects in PIC are boxes, circles, ellipses, lines, arrows, arcs, spline curves and text. These may be placed anywhere, at positions specified absolutely or in terms of previous objects. It is implemented as a preprocessor to Troff.

[Kernighan82b] B. W. Kernighan and M. E. Lesk, "Unix Document Preparation," in: *[Nievergelt82]*, pp. 1-20, 1982.

A revised version of [Kernighan78].

[Kernighan84a] B. W. Kernighan, "PIC — A graphics language for typesetting," Computer Science Technical report 116, Bell Laboratories, 1984.

The PIC manual as of December 1984; see also [Kernighan81].

[Kernighan84b] B. W. Kernighan, "The UNIX Document Preparation Tools — A Retrospective," in: *[Miller84b]*, pp. 12-25, 1984.

An overview of the UNIX tools for document preparation.

[Kernighan85] B. W. Kernighan, "Recent Work in Unix Document Preparation Tools," in: *Proceedings EUUG85*, Copenhagen, 1985.

Describes GRAP, a preprocessor to Troff for typesetting graphs, and enhancements to PIC that permit the creation of more complex figures. See also [Bentley84].

[Kimura84a] G. D. Kimura, "A Structure Editor and Model for Abstract Document Objects," TR 87-07-04, Department of Computer Science, University of Washington, 1984.

This dissertation presents an expressive model that is suitable for paper and electronic documents, and a designs of an editor that is based on a graph-like structure.

[Kimura84b] G. D. Kimura and A. C. Shaw, "The Structure of Abstract Document Objects," *SIGOA*, no. 5.1-2, pp. 161-169, 1984.

The principal concepts are the notions of abstract and concrete objects, hierarchical composition of objects, sharing of components and reference links.

[King84] P. R. King, "W-p: a prototype text-processor and document formatter," in: *[Miller84b]*, pp. 161-172, 1984.

An interactive, 'what you see is close to what you get', system whose commands are high-level and serve to define the hierarchical composition of a document.

[Knuth79] D. E. Knuth, *TEX and Metafont: new Directions in Typesetting,* Digital Press, 1979.

Part I is a reprint of 'Mathematical Typography' (Bulletin AMS, March 1979, Vol 1.2, pp 337-372), which discusses both the typography of

mathematics and the use of mathematics in typography. Part II is a handbook of TEX, woefully out of date. Part III discusses METAFONT, a system for alphabet design.

[Knuth81] D. E. Knuth and M. F. Plass, "Breaking Paragraphs into Lines," *Software — Practice and Experience*, vol. 11, pp. 1119-1184, 1981.

Detailed discussion of TEX's linebreaking algorithm, based on the concepts 'boxes', 'glue' and 'penalties'.

[Knuth84] D.E. Knuth, *The TEXbook*, Addison-Wesley, 1984.

The definitive guide to the use of TEX, written by the system's creator.

[Kowarski83] I. Kowarski and C. Michaud, "Midoc, a microcompuer system for the management of structured documents," in: *IFIP83*, pp. 567-572, 1983.

Describes Midoc, a system in which documents may be parametered, and are provided with a user-defined logical tree structure.

[Lamport85] L. Lamport, *LATEX: A Document Preparation System*, Addison-Wesley, 1985.

[Lampson78] B. W. Lampson, "Bravo Manual," in: *Alto User's Handbook*, B. W. Lampson and E. A. Taft (ed.), Xerox PARC, 1978.

Bravo is an integrated text editor/formatter which influenced the design of the Star user interface. See also [Smith82a].

[Lerner83] R. G. Lerner et al, "Primary Publication Systems and Scientific Text Processing," in: *Annual Review of Information Science and Technology*, M. E. Williams (ed.), vol. 18, pp. 127-149, 1983.

This article discusses a number of text preparation systems including the Unix tools and TEX, different output and storage devices used in text processing systems, and some possible future developments.

[Lesk77] M. E. Lesk and B. W. Kernighan, "Computer typesetting of technical journals on UNIX," in: *AFIPS46*, pp. 879-888, 1977.

Describes an experiment in which Troff is evaluated by measuring use of computer and economic resources when typesetting (technical) manuscripts.

[Lesk79a] M. E. Lesk, "Some Applications of Inverted Indexes on the UNIX system," in: *UNIX Programmers Manual 7th edition*, vol. 2A, pp. 189-201, Bell Laboratories, 1979.

The second part of this paper discusses refer, a preprocessor to Troff to extract references from databases or files.

[Lesk79b] M. E. Lesk, "TBL — A Program to Format Tables," in:

UNIX Programmers Manual 7th edition, vol. 2A, pp. 163-180, Bell Laboratories, 1979.

TBL is a preprocessor to Troff which makes even fairly complex tables easy to specify and enter.

[Levison83] M. Levison, "Editing Mathematical Formulae," *Software — Practice and Experience*, vol. 13, pp. 189-195, 1983.

An editor which allows the user to create and modify a formula by manipulating a pictorial representation on a display.

[Lippman85] A. Lippman et al, "Color word processing," *IEEE Computer Graphics and Applications*, pp. 41-46, June 1985.

Addresses incorporation of color into word processing systems as a cognitive aid.

[Lucarella85] D. Lucarella, *Proceedings of the first European Conference on TEX for Scientific Documentation.*, Addison-Wesley, 1985.

Contains 18 papers discussoing various aspects of TEX and METAFONT.

[Meyrowitz82] N. Meyrowitz and A. van Dam, "Interactive Editing Systems, part I, II," *ACM Computing Surveys*, no. 14.3, pp. 321-415, 1982.

Part I provides a comprehensive and systematic view of the features of typical editing systems. Part II is a survey which presents numerous examples of systems in both the academic and commercial arenas.

[Miller84a] J. J. H. Miller (Ed.), *An Introduction to Text Processing Systems,* Boole Press, 1984.

Provides, for a non-specialist audience, an introduction to computer-aided text processing (mainly TEX and Troff).

[Miller84b] J. J. H. Miller (Ed.), *Protext I Conference Proceedings,* Boole Press, 1984.

Proceedings of the First International Conference on Text Processing Systems (29 papers).

[Mooney82] J. D. Mooney, "MFS: A Modular Text Formatting System," in: *AFIPS 1982 National Computer Conference Proceedings*, H. L. Morgan (ed.), pp. 529-535, 1982.

This paper presents the design goals and architecture of the Modular Formatting System. MFS applies to formatters the principles of separation of functions. A small kernel forms the basis of a family of formatting systems.

[Mudur79] S. P. Mudur et al, "Design of Software for Text Processing," *Software — Practice and Experience*, vol. 9, pp. 312-323, 1979.

Favourable features of text processing systems are: flexible style

specifications, economical proof generation, multilingual text input, device independence, and portability. A system designed on the basis of such considerations is briefly described.

[Nemeth85] K. Nemeth, "Principles of Document Interchange Protocol for CCITT Telematic Services," *IEEE Communications Magazine*, no. 23.3, pp. 23-28, March 1985.

Descibes the CCITT Document Interchange Protocol.

[Nievergelt82] J. Nievergelt et al (Ed.), *Document Preparation Systems,* North-Holland, 1982.

A snapshot of representative developments in the field of computer aids to document preparation, dissemination, storage and retrieval.

[Noot83] H. Noot, "Structured Text Formatting," *Software — Practice and Experience*, vol. 13, pp. 79-94, 1983.

An abstract format machine is presented which can be 'microprogrammed' to yield (structured) document formatters. Its language contains constructs for the manipulation of blocks of text.

[Ossanna79] J. F. Ossanna, "NROFF/TROFF user's manual," in: *UNIX Programmers Manual 7th edition*, vol. 2A, pp. 203-236, Bell Laboratories, 1979.

This manual contains a description of all the basic functions incorporated in Nroff and Troff. Some examples are given of how to define commands using the basic functions as primitives.

[Plass81] M. F. Plass, "Optimal Pagination Techniques for Automatic Typesetting Systems," Report STAN-CS-81-870, PhD Thesis Stanford University, 1981.

Discusses techniques for optimal placement of figures, displays and the like. The model is based on the one used in TEX.

[Plass82] M. F. Plass and D. E. Knuth, "Choosing better line breaks," in: *[Nievergelt82]*, pp. 221-242, 1982.

Considers a new approach to the problems of dividing a paragraph into lines. The method considers the paragraph as a whole, and is based on the concepts 'boxes', 'glue' and 'kerfs'. Implemented in TEX. See also [Knuth81].

[POSTSCRIPT85a] POSTSCRIPT, *POSTSCRIPT Language Reference Manual,* Adobe Systems Incorporated, Addison-Wesley, 1985.

Postscript is an interpretative programming language to describe the appearance of text, images and graphic material on printed pages.

[POSTSCRIPT85b] POSTSCRIPT, *POSTSCRIPT Language Tutorial*

and Cookbook, Adobe Systems Incorporated, Addison-Wesley, 1985.

Another book on POSTSCRIPT, see also [POSTSCRIPT85a].

[Pringle79] A. Pringle et al, "Aspects of Quality in the Design and Production of Text," in: *Siggraph '79*, B. W. Pollack (ed.), pp. 63-70, ACM, 1979.

Addresses quality aspects of a letter design system, high quality television transmission of text, and presentation of tabular text.

[Quint82] V. Quint, "An Interactive System for Editing Mathematical Documents," in: *Integrated Interactive Computing Systems*, P. Degano and E. Sandewall (ed.), pp. 153-165, North-Holland, 1982.

Describes Edimath, a syntax-directed interactive system for manipulating mathematical formulae.

[Quint83] V. Quint, "An interactive system for mathematical textprocessing," *Technology and Science of Informatics*, no. 2.3, pp. 169-179, 1983.

See [Quint82].

[Quint84] V. Quint, "Interactive Editing of Mathematics," in: *[Miller84b]*, pp. 55-68, 1984.

See [Quint82].

[Reid80a] B. K. Reid, "A High-Level Approach to Computer Document Formatting," *POPL ACM*, no. 7, pp. 24-31, 1980.

An overview of Scribe. The user indicates the structure of a document in his text, while layout directives are collected in a database with document types.

[Reid80b] B. K. Reid and J. H. Walker, *Scribe Introductory User's Manual, 3rd ed.,* Unilogic, Pittsburgh, 1980.

Scribe's manual. See also [Reid80a].

[Reid80c] B. K. Reid, "Scribe: A Document Specification Language and its Compiler," CMU-CS-81-100, Carnegie-Mellon University, 1980.

Describes the design of a 'formatter' in which the separation of form and content is achieved. See also [Reid80a].

[Reid81] B. K. Reid and D. R. Hanson, "An annotated bibliography of background material on text manipulation," in: *[SIGPLAN81]*, pp. 157-160, 1981.

A small bibliography listing classic or important work.

[Reid84] J. K. Reid and M. J. Hopper, "TSSD: A Typesetting System

for Scientific Documents," in: *[Miller84b]*, pp. 216-221, 1984.

Describes TSSD's high-level descriptive command language and some of the design aims.

[Saltzer65] J. Saltzer, "Manuscript typing and editing: TYPESET, RUNOFF," in: *The Compatible Time-Sharing System: A programmer's guide,* , P. A. Crisman (ed.), section AH.9.01, 2nd edition, MIT , 1965.

An early influential system, having distinct command and text lines. Differentiation is by a special character in column one. A predecessor of Troff.

[Seybold82] J. W. Seybold, "Document Preparation Systems and Commercial Typesetting," in: *[Nievergelt82]*, pp. 243-264, 1982.

The development of methods of photocomposition is described and the history of the use of computer programs for the production of typeset output is traced.

[Shaw80] A. C. Shaw, "A model for document preparation systems," Technical Report 80-04-02, Department of Computer Science, University of Washington, Seattle, 1980.

[SIGPLAN81] SIGPLAN, "Proceedings of the ACM SIGPLAN SIGOA Symposium on Text Manipulation," *SIGPLAN Notices*, no. 16.6, 1981.

Contains 20 papers and a bibliography; some of these are mentioned separately.

[Smith82a] D. C. Smith et al, "Designing the Star User Interface," *BYTE*, pp. 242-282, feb 1982.

The Star user interface differs from that of other office computer systems by its emphasis on graphics, its adherence to a metaphor of a physical office, and its rigorous application of a small set of design principles.

[Smith82b] D. C. Smith et al, "The Star User Interface: an Overview," in: *AFIPS 1982 National Computer Conference Proceedings*, H. L. Morgan (ed.), pp. 515-528, AFIPS, 1982.

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Outlines the capabilities that electronic document systems should possess, and describes four document systems developed or under development at Brown University.

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Systems used

C. Bigelow (p 1), composed in Lucida typefaces, formatted with TeX82 on a VAX11/730 under VAX/VMS, printed on an Imagen 8/300 laser printer.

R.J. Beach (p 18), formatted with Tioga in the Cedar environment on a high-performance workstation, the Interpress 3.0 master was printed on an experimental high-resolution laser platemaker.

P.J. Brown (p 34), Troff with ms-macros, using a Canon LBP-10.

V.A. Burrill (p 43), Troff on a PDP11/44, printed on a Versatec V-80 phototypesetter; screens by MacPaint.

E.J. Yannakoudakis (p 65), RX 860 word processor linked to XVC2E Xenotron make-up screen, printed on Linotron 101 typesetter.

R. Hamlet (p 78), Device-independent Troff on a VAX 11/780, printed on an Imagen 8/300 laser printer (and reduced before printed).

M. Nanard (p 90), prepared using the Biostation whith an HP-Laserjet.

V. Joloboff (p 107), Sroff on a VAX under UNIX, printed on a Digital LN01 laser printer.

M.H. Kay (p 125), prepared on ICL DRS 8801 word processor using COMPOSE, printed on Visutek Scantext typesetter; diagrams on Apple Macintosh.

D.D. Cowan (p 140), LaTeX on a VAX 780 (UNIX 4.2), printed on an Imagen 300 laser printer.

B. Gowan (p 171), ditroff on VAX11/780, printed on a Harris 7500 typesetter.

C.Y. Suen (p 178), homegrown system on a VAX 11/780, printed on a Versatec printer, 200 dots/inch.

V. Quint (p 200), typeset using Sroff (homegrown) on a VAX 11/780, printed on a Digital LN01 laser printer.

B. K. Reid (p 214), used Scribe and PostScript, printed on an Apple LaserWriter, and later reduced.

P. Goyal (p 224), homegrown program, running on a CYBER 835, printed on a XEROX 2700II laser printer.

U. Corda (p 233), Troff on a SUN running UNIX and producing PostScript, printed on an Apple LaserWriter.

R. Furuta (p 246), LaTeX on a VAX running UNIX, set on an Alphatype.

J.C. van Vliet (p 260), ditroff on a VAX11/780, printed on a Harris 7500 typesetter.